

In the Claims

1. **(currently amended)** Filamentary particles of a lithium salt of a conjugated polymerizable polyacetylene having at least one terminal carboxylic acid or carboxylate group and a mixture of said polyacetylenes; said filamentary particles having a length to width ratio of at least 5:1; said filamentary particles having no platelet particles mixed therewith.

2. **(original)** The lithium salt filaments of claim 1 wherein the average length of said filaments between about 5 and about 50,000 μm .

3. **(original)** The lithium salt filaments of claim 1 wherein the length to width ratio is between about 5:1 and about 5,000:1.

4. **(original)** The lithium salt filaments of claim 1 wherein said salt contains from 6 to 64 carbon atoms.

5. **(original)** The lithium salt filaments of claim 4 wherein said salt contains from 10 to 40 carbon atoms.

6. **(original)** The lithium salt filaments of claim 5 wherein said salt is the lithium salt of a polyacetylene selected from the group consisting of pentacos-10,12-dienoic acid; tricos-10,12-dienoic acid; heneicos-10,12-dienoic acid, eicos-5,7-dienoic acid and their corresponding lower alkyl esters.

7. **(original)** A photosensitive coating composition suitable for image development by exposure to a source of radiation which comprises an inert matrix containing an effective imageable amount of the lithium salt filaments of claim 1 wherein the filamentary particles have a length to width ratio of greater than 5:1 and the average length of the filaments is between about 10 and about 50 μm .

8. **(original)** The composition of claim 7 wherein said matrix is water or a solution or dispersion of a natural or synthetic polymer or a mixture thereof.

9. **(original)** The composition of claim 8 wherein the matrix is an aqueous solution of gelatin.

10. **(original)** The composition of claim 7 wherein said salt is the lithium salt of a polyacetylene selected from the group consisting of pentacos-10,12-dienoic acid; tricos-10,12-dienoic acid; heneicos-10,12-dienoic acid; eicos-5,7-dienoic acid and their corresponding lower alkyl esters and mixtures thereof.

11. **(original)** The lithium salt of claim 6 wherein said salt is the lithium salt of pentacos-10,12-dienoic acid.

12. **(original)** The composition of claim 10 wherein said salt is the lithium salt of pentacos-10,12-dienoic acid.

13. **(original)** A substrate carrying the composition of claim 7.

14. **(original)** A substrate carrying the dry composition of claim 7.

15. **(original)** A dosimeter comprising a substrate of claim 14.

16. **(original)** A radiation indicator comprising a substrate of claim 14.

17. **(currently amended)** The process for preparing the lithium salt filaments of claim 1 which comprises the following steps in sequence:

- (a) mixing a solution of a conjugated, polymerizable polyacetylene having at least one terminal carboxylic acid or carboxylate functional group in a matrix which is inert to said polyacetylene and any polymerized product thereof;

- (b) contacting the carboxylic acid and/or carboxylate terminal group of the polyacetylene with a lithium salt sensitizer reactive with said carboxylic acid and/or carboxylate group to form a solution of the lithium salt of said polyacetylene;
- (c) quenching the resulting matrix/lithium salt solution of (b) to below room temperature and holding at that temperature for a period sufficient to nucleate and precipitate the lithium/polyacetylene salt in the matrix;
- (d) heating and holding the product of step (c) until the filaments of the lithium/polyacetylene salt form and grow to an average length greater than 5 μm and a length to width ratio of at least 5:1;
- (e) ~~optionally~~ reducing the length of the filaments by mechanical means;
- (f) ~~optionally~~ repeating steps (d) through (e) until a desired filament length and radiation sensitivity is obtained and
- (g) recovering the filamentary salt product of claim 1 as the product of the process.

18. **(original)** The process of claim 17 wherein the lithium salt sensitizer is selected from the group consisting of a lithium halide, lithium nitrate; lithium sulfate; lithium carbonate; a lithium alkyl carboxylate; a lithium aryl carboxylate and a mixture thereof.

19. **(original)** The process of claim 17 wherein step (d) is carried out at a temperature of between about 40° and about 100°C.

20. **(original)** The process of claim 17 wherein said matrix is selected from the group consisting of gelatin, collagen, agar, xanthan gum, synthetic polymer and mixtures thereof.

21. **(original)** The process of claim 17 wherein said matrix is an aqueous solution of gelatin.

22. **(original)** The process of claim 17 wherein said matrix is water.

23. **(original)** The process of claim 17 wherein the weight ratio of lithium/polyacetylene salt to matrix in step (b) is between about 100:1 and 1:10.

24. **(original)** The filamentary salt of claim 1 dispersed in an inert matrix suitable for coating a substrate wherein the weight ratio of said salt to matrix is between about 4:1 and about 1:5.

25. **(original)** The filamentary salt of claim 24 dispersed in a film-forming matrix selected from the group consisting of gelatin, collagen, agar, xanthan gum, a synthetic film forming polymer and a mixture thereof.

26. **(original)** The filamentary salt of claim 1 dispersed in dry gelatin.

27. **(original)** The process which comprises contacting a dispersion of platelets of a lithium salt of a conjugated polyacetylene with at least 0.1 wt.% of the filaments of claim 1 for a period sufficient to convert said platelets to filaments.

28. **(original)** The process wherein the filamentary salt product of the process of claim 17 is contacted with a lithium/acetylene salt composed of plate-like particles and held at an elevated temperature for a period sufficient to convert the plate-like particles to filamentary particles.

29. **(original)** The process wherein the filamentary salt product of claim 17 is mixed with a solution of a polymerizable, conjugated polyacetylene having at least one terminal carboxylic acid or carboxylate group or a mixture thereof and contacted with a solution of a lithium salt sensitizer selected from the group consisting of a lithium halide, lithium nitrate, lithium sulfate, lithium carbonate, a lithium alkyl carboxylate, a lithium aryl carboxylate and mixtures thereof.